

Structural and  
Fireproofing  
**CONCRETE  
TILE**

1910

Concrete  
Stone and Sand  
Company

Youngstown, Ohio



ANY useful article having the two attributes of quality and reasonable price is sure to meet with the approval of a discerning public. Concrete structural tile has not been an exception. Wherever tests and demonstrations of economy and practicability, herein explained, have been given, the people have been favorably impressed and the product quickly adopted for the uses to which its peculiar qualifications especially fit it. Throughout the catalogue this fact is abundantly illustrated by the citation of the experiences of the initial plant installed by the inventor, A. A. Pauly, at Youngstown, Ohio.

The demand of the public is for absolutely safe homes at reasonable prices. This public needs only to be educated to the merits of **concrete structural tile** in order to know how to satisfy this want. Those contractors, architects and concrete engineers who have already used this product are meeting with great success and without exception, unreservedly endorse its good qualities.



The Public's Endorsement is  
Evidenced by the Success of the Initial Plant

# Sanitary, Fireproof, and Economical Homes are Herein Proved Practical For Every American Family



Vaughn Residence on Glen Aven Street



# Concrete Structural Tile

## The Embodiment of Every Essential Qualification for Modern Construction

Structural tile of concrete is conceded to be the most advanced attainment of the industry, and it is absolutely independent of all the other branches of concrete building materials or construction systems. It is the route by which the initial cubic yard of concrete (Portland cement, a suitable aggregate and water) attains its highest value. It is now reduced to a business proposition containing a substantial profit for manufacturer and user alike.

The system for manufacturing this material is easy to understand, practical and the most scientific method of handling concrete. Structural tiles of every useful shape and size can be produced of concrete, and such tile have many important advantages over all other materials that have heretofore been produced for purposes parallel to those for which concrete structural tile is useful and applicable. All the structural tile made by our system are cast or molded by specially designed machines in steam-heated molds, the materials having first been properly proportioned, mixed, and prepared for pouring. Excess water being driven off by steam, the tile is ejected from the mold mechanically, and then annealed or cured in an oven provided with steam connections giving a definite progression of heats and moisture so as to secure quickly the complete and perfect crystallization of the concrete material. The finished tile has the minimum porosity for the absorption of water obtainable in concrete, while at the same time the highest fire resisting quality is attained, both being due to the extreme density of the concrete produced by the process. The corners, edges, angles and plane surfaces of the tile are all mathematically correct, and in this respect these concrete tile outclass every other building material of whatever composition or for whatsoever purpose. The economic uses for such materials are apparent to every practical constructor of buildings.

Exhaustive tests have been conducted to establish the structural value of this new building material, to prove its strength in compression, the amount of absorption when immersed in water, and its resistance to fire—these being the three elements of importance to be considered in every building material. All such tests have been conducted publicly upon a practical and thorough basis, and every one of them has demonstrated this type of concrete tile to possess the highest qualifications in each of these

requisites. The tests are taken up in detail upon another page.

The practical construction work that has been done during the past two years, under the eye of the inventor of the system and machinery for making the tile, Mr. A. A. Pauly, of Youngstown, O., has been highly successful in every case, as exhibited by scores of houses finished and now in use. The inventor has organized and established an extensive plant, which at the present time is crowded with business to its capacity, and is being operated at a substantial profit. The basis of operations can be expressed in a few words:

By means of this system the typical or initial cubic yard of concrete, costing approximately \$3, is transformed—by a factory cost of approximately \$1—into a commodity readily salable at from \$7 to \$10, according to the size and configuration, which commodity will find a ready sale in unlimited quantities.

The success of the pioneer plant is convincing proof that in the Pauly system for concrete structural tile manufacture lies a wonderful opportunity in a new phase of the manufactured building material business. One that contains, indeed, a substantial profit, with a growing future, which logically will develop an enormous demand.

The Concrete Stone and Sand Company is placing the Pauly tile machines with well qualified manufacturers, having suitable concrete aggregates and capital to insure the installation of plants capable of carrying on this business successfully. This action is based upon the tremendous local growth of the business and upon the constantly increasing demands for concrete structural tile from all parts of this country and foreign lands. The machines are leased only; this plan being adopted in order to insure the lessee of the exclusive control of the machines in the territory in which he operates, during the life of his lease.

We wish to urge a careful examination of these and following statements, as only such parties as will engage to make and maintain a high grade product, can become lessees of these machines. We are always glad to discuss this proposition with those contemplating an entrance into this branch of the concrete industry, and extend herewith a cordial invitation to all those wishing to visit our plant and meet the inventor in person.



## PITTSBURGH, PA.

Dec. 23. 1909.

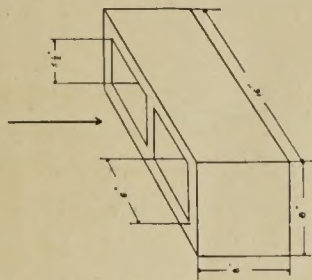
Report of Tests of Building Tile.

Made for  
Concrete Stone & Sand Co., Youngstown, Ohio.

Lab'y. No.

29837  
Mark. Slag & Sand.

Total sectional area sq. inches.	128.
Net sectional area sq. inches.	62.
Pipe: sign of failure	
Pounds per sq. inch.	483
Grasping strength pounds per sq. inch	1000.



**PHYSIOLOGICAL TESTING LABORATORY,**

John M. Bailey

10.1.02.

**PITTSBURGH TESTING LABORATORY,**  
INSPECTING AND METALLURGICAL ENGINEERS  
AND CHEMISTS.  
PITTSBURGH, PA.

1909.

Dec. 23. 1909. 1909.

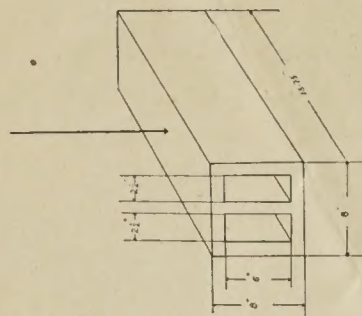
Report of Tests of Building Tills.

Made for  
Concrete Stone & Sand Co., Youngstown, Ohio.

Lab'y - No.

29836  
merk. Sand 28 day.

Total sectional area sq. inches	126.00-
Net sectional area sq. inches	47.25*
First sign of failure	350.
pounds per sq. inch.	
Crushing strength pounds per sq. inch	350



PITTSBURGH TESTING LABORATORY.

Mr. W. Bailey

1990.3.430.

**PITTSBURGH TESTING LABORATORY,**  
INSPECTING AND METALLURGICAL ENGINEERS  
AND CHEMISTS.  
PITTSBURGH, PA.

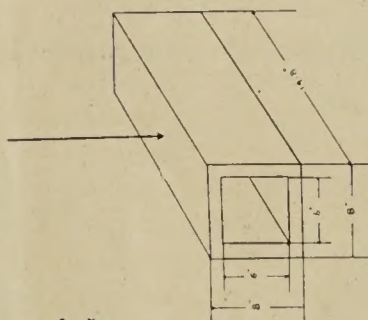
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*Report of Tests of Building Tile.*

Made for  
Concrete Stone & Sand Co., Youngstown, Ohio.

Lab'y. No.

mark. Slag.			
Total sectional area sq. inches	118.40		
Net sectional area sq. inches	29.60		
First sign of failure			
pounds per sq. inch.	675		
Crushing strength pounds per sq. inch	738		



ENVIRONMENTAL TESTING LABORATORY,

John G. Bailey

10. 2. 2008.

**PITTSBURGH TESTING LABORATORY,**  
INSPECTING AND METALLURGICAL ENGINEERS  
AND CHEMISTS.  
PITTSBURGH, PA.

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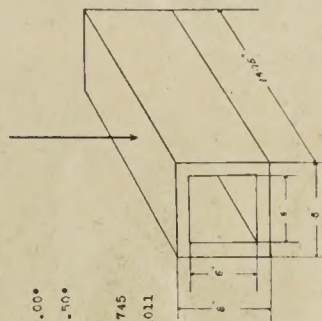
*Report of Tests of Building Tile.*

Concrete Stone & Sand Co., Youngstown, Ohio.

ep'y. No.

29839  
Lark. Limestone.

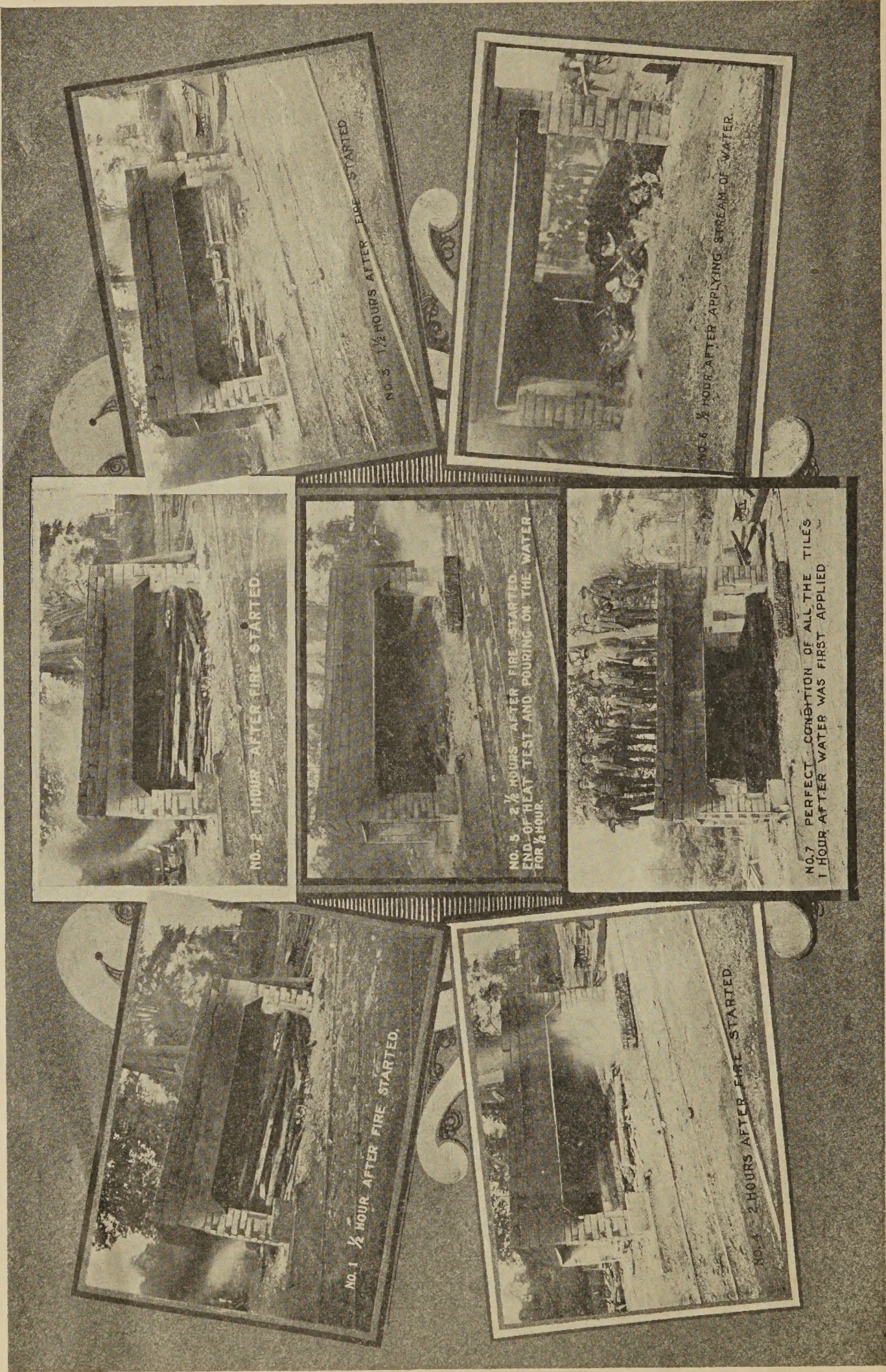
Total sectional area sq. inches	118.00.
Net sectional area sq. inches	29.50.
First: sign of failure	
pounds per sq. inch	745
crushing strength pounds per sq. inch	1011



THE UNIVERSITY OF CHICAGO

John W. Bailey





Record Photographs of Fire Test Proving the High Fire Resistance of Concrete Tile



# Practical Fire and Compression Tests

All the tile made a very favorable showing in repeated fire tests, seeming in every way to be superior to any other parallel material that could be found. At the suggestion of Mr. Chas. Connell, a concrete engineer-contractor of very considerable attainments, and the building authorities of the city of Youngstown—C. C. Knox, building inspector; Capt. W. H. Loller, chief of the fire department; Arthur Young, city engineer, and others—it was decided to give the concrete tile a practical fire test, by means of an elevated floor span constructed so as to provide for placing a very hot fire beneath it.

Such a floor span was constructed under the supervision of Mr. Connell. It was 12'x16' in size, and consisted of four piers, 2 feet square, rising 4 feet from the level surface of the ground. Two reinforced concrete beams 8"x16" and 16' long, parallel, and resting upon the piers at each end of their 8-inch surface, carried the span. Shearing brackets, monolithic with these beams and also the piers, were provided at both ends, and these were reinforced with two 5/8-inch lug bars. Each of the beams was reinforced with two 16-foot girder frames, provided with connected shearing members. Twelve joists or ribs of reinforced concrete, connected the two beams in the following manner: At each end of the span a joist measuring 8"x8" and reinforced with four 5/8-inch lug bars connected the two beams. Next to this were laid a row of eight of the concrete tile. Next to these approaching the center, was laid another rib 4"x8", reinforced with two 5/8-inch lug bars, and this process was continued until ten ribs, each constructed in exactly the same manner, and alternating regularly with rows of eight tiles, completed the span, with 11 rows of tile. The tiles were laid flush with the ribs at the bottom, and being only 6" through, left the 8-inch ribs projecting 2" above the top of the tiles. This 2-inch space above the tiles was filled with gravel concrete, and the upper surface troweled off to a finish like first-class sidewalk work. The beams and ribs as well as the monolithic piers were all made of good gravel concrete. Forty of the tiles used were made of cinder concrete; forty of slag concrete; and eight of gravel concrete. All the centerings were removed from the span when three weeks old, and was carefully inspected to see that the work was in perfect condition.

When the span was thirty days old it was loaded to 200 pounds for every square foot of its surface, and ten days later it was subjected to a fire test of the severest possible character. Some four and a half cords of combustible material were placed beneath the floor span, consisting of wood fagots—and these were thoroughly saturated with kerosene. A torch was applied at 7 a. m. and fire sustained with increasing intensity until 9:30 a. m., when water from a 20-pound pressure nozzle was

applied to the fire and heated under-surface of the span, directly against the tiles. It required forty-five minutes to reduce the temperature so as to make it possible to approach the test structure. Examination developed the fact that practically no damage had been done to the tile by this severe test. The evidences of the intensity of the heat were easily observed. The interior surfaces of the concrete piers showed many glassy spots, indicating that the sand had fused. Pyrometric cones placed as close to the fire zone as practical, indicated more than 1,800° F. This public test was conducted in the presence of the following persons: Capt. W. H. Loller, chief Youngstown fire department; D. Heinselman, chairman board of public service; Chas. C. Knox, inspector of buildings; A. G. Young, building contractor; Angus S. Wade, supervising architect; C. T. Agnew, county commissioner; C. H. Connell, engineer-contractor; Fred K. Irvine, editor Rock Products, and the inventor, A. A. Pauly. In addition to these, many other individuals who took an interest in the demonstration were present.

This publicly conducted test was recognized as so practical and valuable as a criterion that a statement covering the facts as above set forth, and alleging them to be authentic, was drawn up and signed by all the above witnesses of the test.

A compression test was made at the Gulick, Henderson & Co. laboratories at Pittsburg, the result of which was as follows:

### Report of Compression Test of Concrete Hollow Tile Made for Albert A. Pauly, Youngstown, Ohio.

Pittsburg, Pa., Dec. 13, 1907.

Laboratory Number	Mark	Dimensions	Total Sec. Area sq. in.	Load Pounds	Crushing Strength per sq. in.	Weight
26011	Rock	11.72" x 11.45"	134.19"	26,720	199	6.02"
26012	Slag	11.82" x 11.50"	135.93"	26,480	194	6.00"

State of Pennsylvania, County of Allegheny, ss:

Before me, a notary public in and for said county and state, personally appeared Henry Gulick, Jr., of the firm of Gulick, Henderson & Co., who swears that the above statement is a true and correct report of the test made.

Sworn to and subscribed before me this 13th day of December, 1907.

GULICK, HENDERSON & CO.

(Seal)

By Henry Gulick, Jr.

W. A. Feltyberger, Notary Public

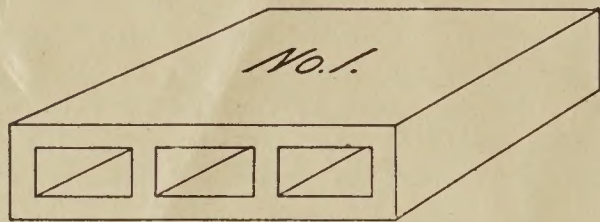
Commission expires January 16, 1909.

Recently a fire test was conducted in the presence of the following gentlemen connected with the local public service: J. B. Kennedy, county commissioner; C. C. Knox, city building inspector; W. H. Lawlor, chief of the fire department; E. S. Walton, retailer and distributor of building supplies; M. E. Dennison, cashier of the First National Bank; Charles H. Connell, concrete contractor-engineer; J. D. Gibson and J. B. Kennedy, Jr.

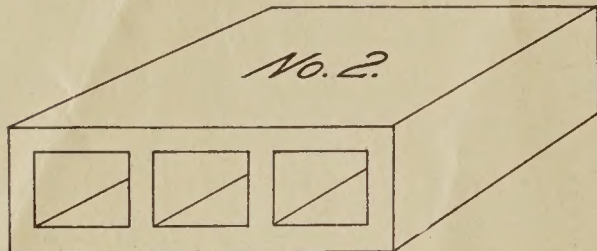


# Correct Dimensions and Simple Forms

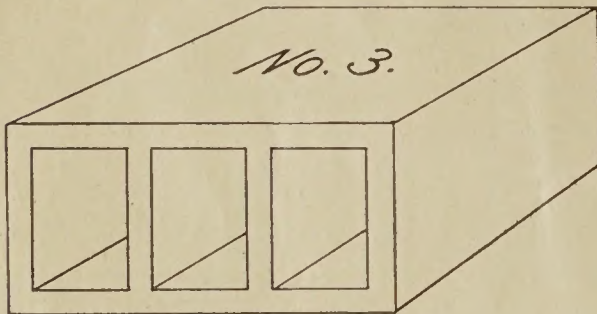
The Tiles Illustrated Here Have Been Used Extensively in the Construction of All the Buildings Shown  
in This Catalogue



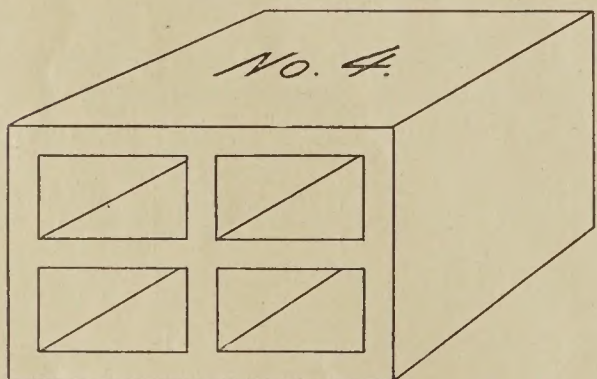
No. 1. 3" x 12" x 12"



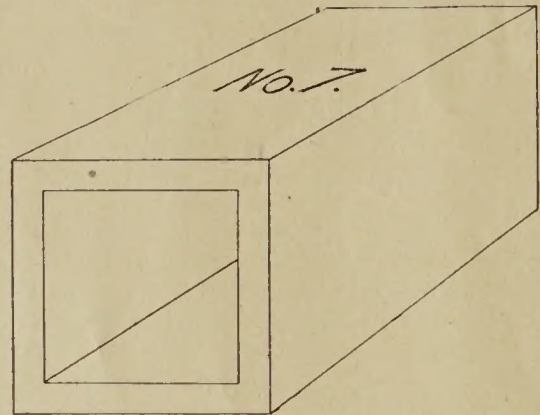
No. 2. 4" x 12" x 12"



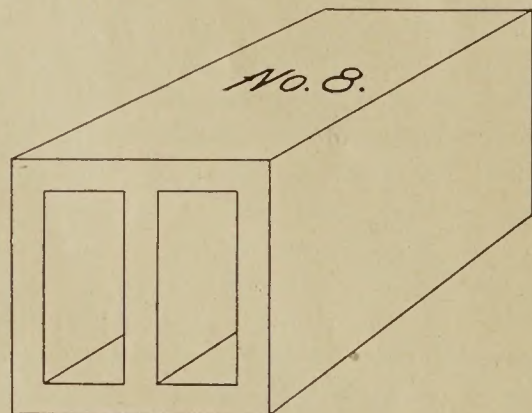
No. 3. 6" x 12" x 12"



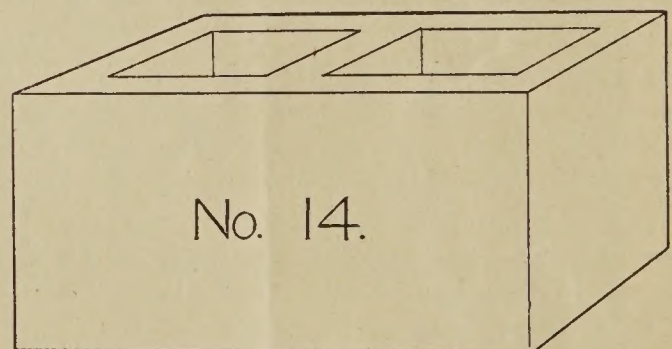
No. 4. 8" x 12" x 12"



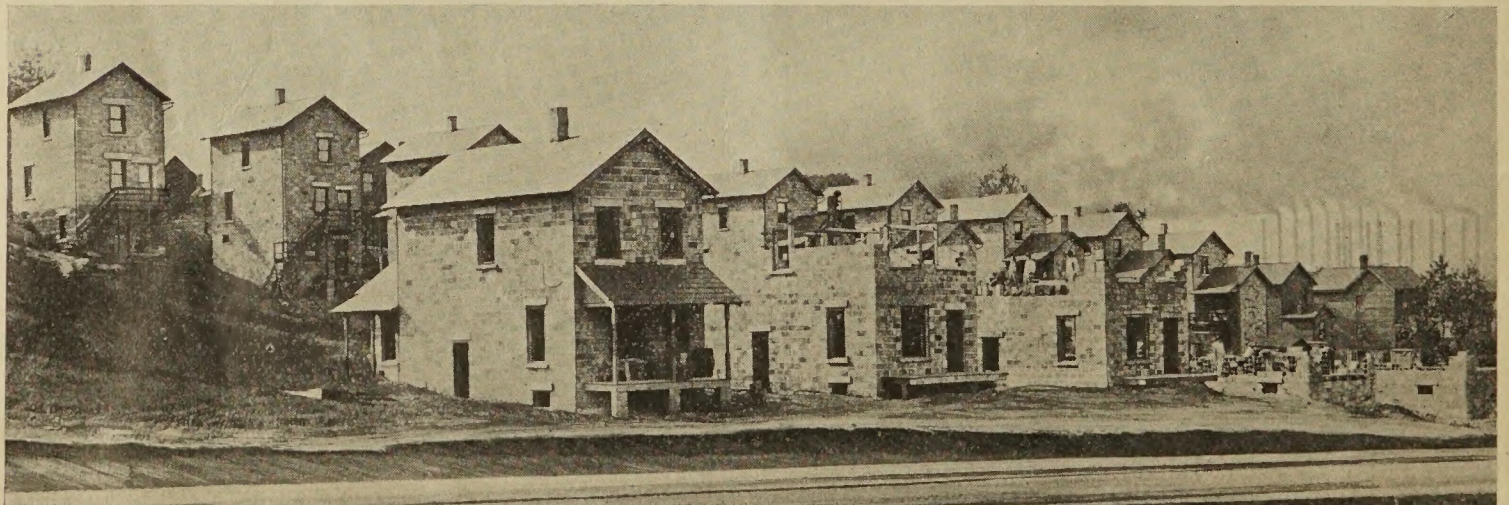
No. 7. 8" x 8" x 16"



No. 8. 8" x 8" x 16"  
No. 10. 8" x 10" x 16"



No. 14. 8" x 8" x 16"  
No. 15. 8" x 10" x 16"



Fifteen Four and Five-Room Houses in This Group



# Concrete Applied to Dwelling House Construction

By Ross F. Tucker, Member American Society Civil Engineers; President Concrete Association of America  
(Written during the first use of Pauly concrete tile.)

The next step in the extension of the use of concrete will be its adaptation to the construction of dwellings. With the army of block machines that are on the market and the great quantity of the "output" from these machines, the bulk of which goes into dwelling house work, it might be assumed that the step above mentioned had already been taken. In a sense it has, but it is a step that, in the writer's opinion, has done concrete a questionable service. The technique of the method of manufacture to which all block makers are restricted is fundamentally wrong and can never be of great value, either constructively or decoratively. The ten to twelve per cent. of water used in mixing is not sufficient to lubricate the particles of aggregate, nor to develop the full set of the cement. Such material cannot possibly have the density nor the strength of a properly made concrete. All the ramming and tamping in the world, all the pressure that can be exerted by hydraulics or otherwise will not compress a dry-made concrete into a dense, water-tight block. The particles of aggregate arch on themselves and cannot be forced to fill corners and interstices without sufficient lubrication to allow the faces and surfaces of the aggregate to slip on one another. On the other hand, the moment that sufficient water is added to secure the best results for density and strength, the material is too soft to be removed from the moulds and the so-called block machines are of no value at all.

It is curious that so many people have taken to block-making as if there were something new about it. The old-fashioned artificial stone of thirty years ago was made of the same material and in the same manner as with block machines today and the resultant material had all the defects of these later productions,—a soft, absorbent, spongy mass, of low compressing strength, requiring all sorts of treatments to make it waterproof. The whole practice is wrong and the only difference between the old method and that of today lies in the numerous mechanical devices, which, with greater or less ingenuity, reduce the labor and mould cost to a minimum. By reason of the faults that lie at the very beginning of all block-making, I do not consider that the steps taken in that direction have been of any great value to the industry as a whole, nor need we expect anything of importance to come out of it in the future. All walls built of such material must be so constructed as to avoid the dampness that such concrete must necessarily acquire, and the very softness of the stone precludes any surface treatment that can be called interesting or satisfying in any degree.

All concrete, to be strong and sound, must be wet concrete, far too wet to be delivered from its mould for considerable periods of time. The principle of selection of aggregates, combined with intelligent combination and mixing, secures results that, in a finished product, are astonishing and absolutely impossible of attainment by any dry process block-machine that ever was devised.

Again, solid wall construction is very limited in its application to dwelling house work. While we have about solved the problem of the mill and factory building, both structurally and economically in reinforced concrete, the same cannot be said at all in respect to dwelling houses. In the mill and factory structure we have a relatively large amount of concrete as compared with the lumber and labor involved in the making of the forms, whereas, in the dwelling house, with the cut-up surfaces and irregular openings, the rates of cost of forms to concrete is out of all scale or proportion and puts concrete practically out of the running in comparison with other material. Moreover, the internal stresses,

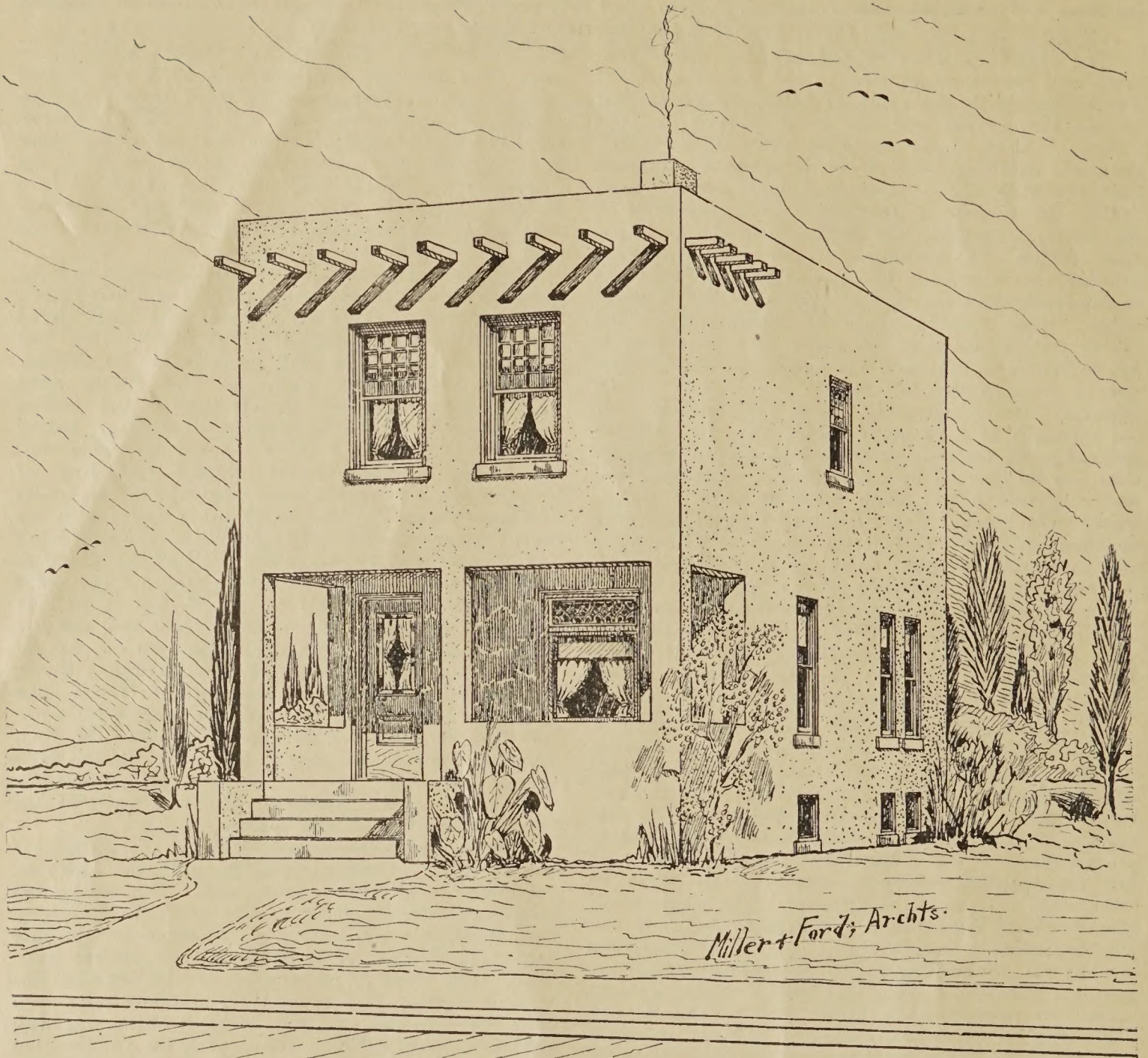
particularly the shrinking of concrete masses, are such that concrete walls of this kind are almost sure to crack. They must be furred or an air space formed, as otherwise they will be damp and extremely unsatisfactory. In the fall and spring there is likelihood of condensation on the inside of an unprotected concrete wall, and, last of all, it is a difficult matter to give a solid wall any architectural treatment that can be called satisfactory, except at a very considerable expense.

The wooden house is, of course, a menace to commence with and should be only built as a last resort. Such a house covered with metal lath and furred has some excellent architectural possibilities, but when well built, will not be found to be cheaper than a rough brick wall, for the frame must be sheathed, papered, metal furred and lathed and covered with scratch coat of mortar before it is in condition to receive the stucco. This will be found to approximate closely the cost of brick work. Much has been said about the faults of stucco work, but like many other failures in the use of concrete, they are traceable to the ignorance of the users rather than to the fault of the material. Stucco has been abused about as much as any other material that the writer knows of, but it will do good service every time if properly made and applied. I have placed ornamental stucco on the exterior of a power house on the St. Lawrence River, on tile, brick and lath surfaces where it has been subjected to a yearly range of 120 degrees temperature for ten years, and it is as good today as when applied, although the plastering on the inside, made exactly the same way, of the same material, came off in pieces a yard square on the same walls within two months after it was applied.

There are great possibilities in the future of stucco when properly handled. But for this development must come a cheap wall. The writer had occasion to make a study of this problem of a cheap wall construction for stucco application for the late Stanford White, who, had he lived, would have taken some steps to show what can be done in decorative stucco. But all existing methods have been too expensive and we must devise a cheap dry wall before we can make material progress in dwelling house work. The terra cotta wall is a relatively cheap wall, but its lack of fire-resisting qualities, its tremendous expansion under heat, make it a dangerous wall, unless insulated and protected. The nearest approach to the ideal wall for concrete dwelling houses seems to have been worked out by A. A. Pauly, of Youngstown. He has a method of delivering wet concrete from moulds in a clever and very economical manner and seems to have solved the problem of handling wet concrete and producing a dense, strong building unit at a very low cost. He has already done considerable building and his development will be watched with great interest. With such a wall, the extension and possibilities of concrete decoration are unlimited and the future will give us fire-proof homes of high structural and architectural value at low cost. The method is so simple, the requirements of skilled labor are so greatly reduced, that houses of concrete, fire-proof throughout, may be constructed at a price to compare favorably with wood, and upon the walls may be applied a great variety of color and texture effects, in stuccos made of many materials, enlivened with masses of color in Faience and Mosaic, that give the architect great opportunity for the exercise of his artistic abilities. It will create a school of design adapted to the material and be productive of a style of dwelling possessing individuality and character, combined with durability and permanency such as we know little of thus far in our suburban architecture.

The Concrete Stone and Sand Company  
Youngstown, Ohio

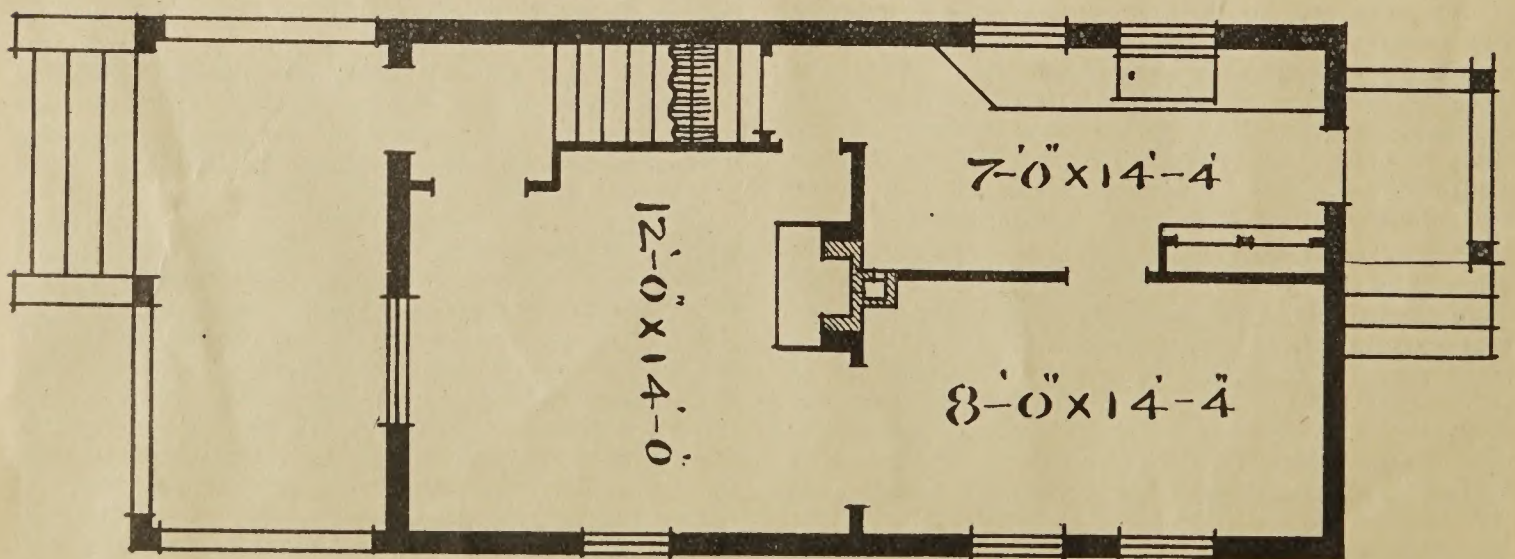




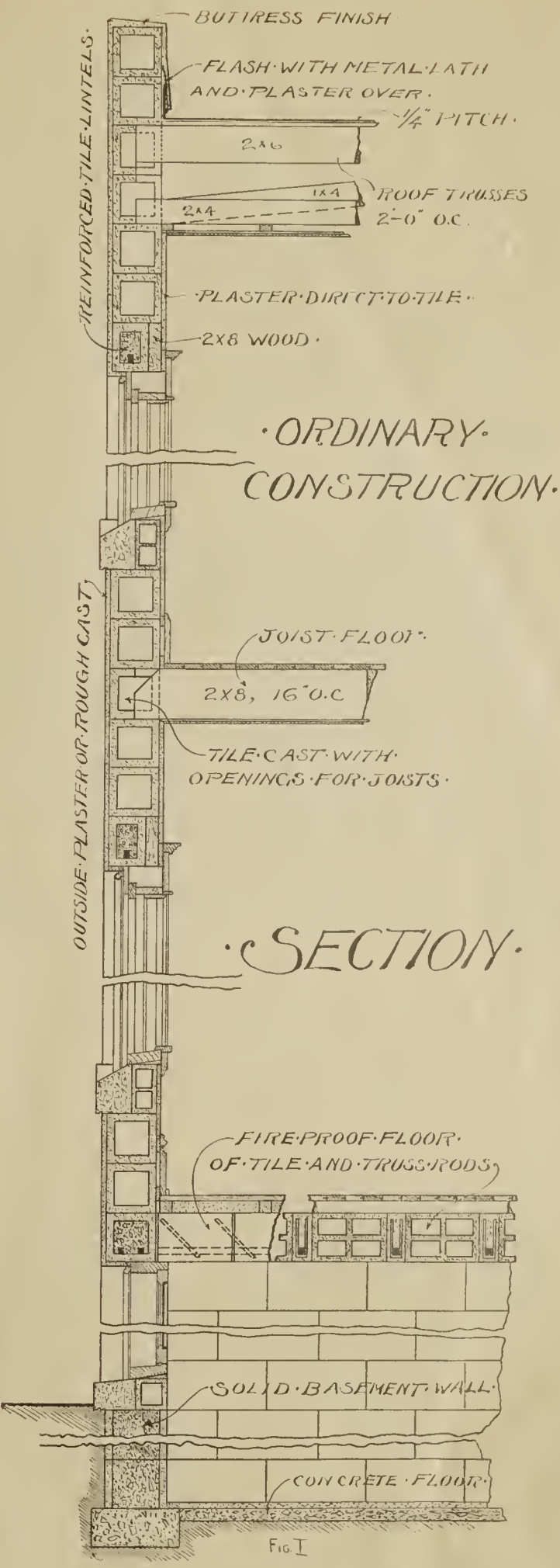
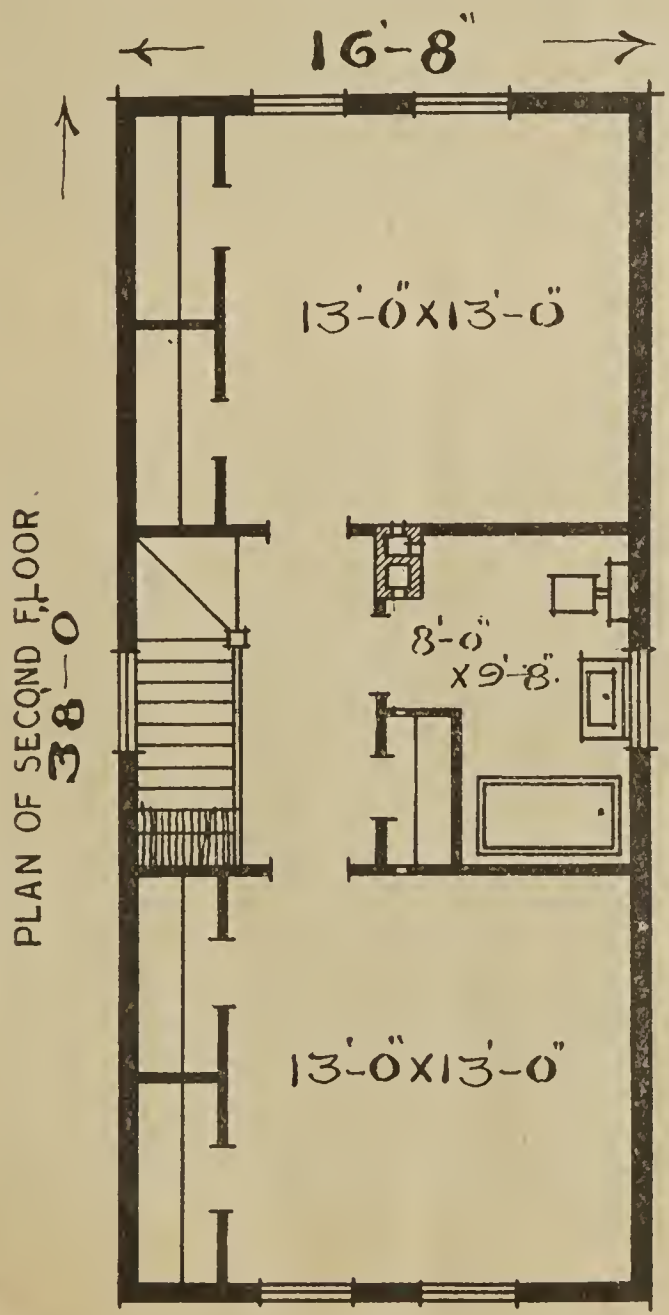
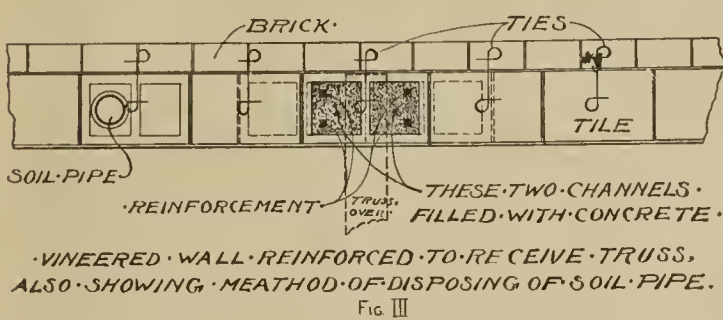
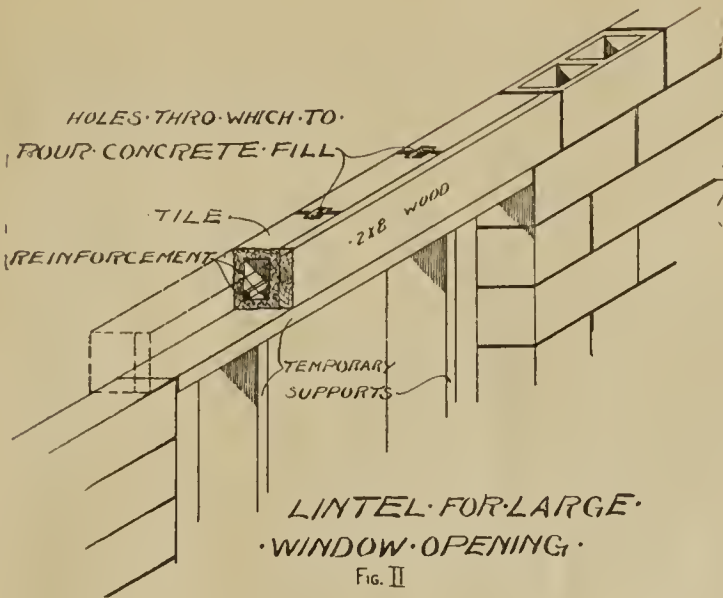
Type of an Economical and Strictly Fireproof Residence

Fig. 4

PLAN OF FIRST FLOOR







The Perspective Floor Plans and Detail Drawings Illustrating the Construction of this Residence are Generally Applicable to Concrete Tile Specifications in Every Type of Building





Thompson Residence on Fairgreen Street



Dalzell Houses on Maple Avenue



J. MARCUS MILLER

H. LYMAN FORD

MILLER & FORD, Architects

ROOMS 409 AND 410 DOLLAR BANK BUILDING

NEW PHONE 1437

Youngstown, O., Jan. 7th, 1910.

The Concrete Stone and Sand Company,  
935 Poland Avenue,  
Youngstown, Ohio:

Gentlemen:

We take pleasure in telling you that we have used your product on a number of jobs and find that it is all that you claim for it, and more. We can recommend it without reserve, and can see nothing to interfere with the universal demand for your product in the very near future.

We predict that your CONCRETE STRUCTURAL TILE will soon largely take the place of frame, and hollow brick construction.

Thanking you for courtesies, and wishing you success, we remain,

Respectfully yours,

MILLER & FORD, Architects,

By H. Lyman Ford.

[COPY].



Mattress Factory on Thomas Street



Mason Residence on Fairview Street



Craver Residence on Belmont Court



Coal Office on East Federal Street





Concrete Tile and Brick Veneer in Combination  
Angus S. Wade, Architect



Workingmen's Fireproof Homes on Clyde Street





Wick Building, Corner Federal and Phelps Streets  
Angus S. Wade, Supervising Architect





Dollar Savings and Trust Building, Central Square  
Owsley & Boucherle, and Angus S. Wade, Architects



**It's Impossible to Get Burnt  
in a House Constructed of Pauly Fireproofing Tile**

ANGUS S. WADE  
Architect  
STAMBAUGH BUILDING

Youngstown, O., January 7th, 1910.

Concrete Stone and Sand Company,  
Youngstown, Ohio

Dear Sirs:

Referring to your poured tile for building purposes, beg to advise that I have used the 10" and 8" tile in the construction of several houses, one of which was for my own use, and from the experience thus gained, I would not hesitate to use this form of tile anywhere that I wished an exterior effect of plaster, as I find that they not only make a house warm and sound proof, but thoroughly dry as well.

I have also used your 3" and 4" product in the construction of The Dollar Savings and Trust Building, the First National Bank Building, and the Wick Building, and very much prefer them to the clay products.

Yours truly,  
ANGUS S. WADE.

[COPY]



**Cab Stand at Erie Depot**  
Designed by Erie R. R. Engineering Department



**Medbury Building on Commerce Street. Tile Construction with Brick Veneer Front**  
Angus S. Wade, Architect. C. H. Connell, Contractor

**The Concrete Stone and Sand Company**  
Youngstown, Ohio





A Scott Street Residence Nearing Completion



Krepps Flats at Oak Hill and Dewey, Under Construction





Residence of Angus S. Wade on Fairgreen Avenue



Pettengill Residence on Ohio Avenue





First National Bank Building on Federal Street  
Angus S. Wade, Supervising Architect



**The Intrinsic Merits of Concrete  
Tile Once Recognized Make It Permanently Standard**

Owsley & Boucherle, Architects, of Youngstown, took up this new material cautiously during the first season after it was introduced. After having used concrete tile in a number of structures of different classes they recognized the merits of the tile, particularly the correct angles and perfect plane surfaces, never yet found in any other material, and were prompt to say so. They now make open specifications for all tile requirements in their work. Quite recently they were commissioned to make plans for a new public High School on the South Side and announce that they will use a large amount of tile in the building, and have authorized the contractor to obtain bids on concrete tile in this important instance.

Kling & Fink, Architects, Youngstown, have in every one of their buildings during the season of 1909, admitted the use of concrete tile where any such were specified.

Quite recently Wm. Ellis, Architect, Youngstown, requested our Company to quote prices on concrete tile for twelve four and five-room houses, stating that from his observations the tile now being used for this class of houses could be recommended to his clients as being as economical as wooden construction for the outer walls of such houses. He also stated that he anticipated building six such houses on his own property and would use concrete tile in their construction.



**Krauter Building on Federal Street, Combining  
Concrete Tile with Former Construction**



**Public School on Delason Avenue  
Owsley & Boucherle, Architects**



Substantial Buildings of Modern Design are  
Invariably Completely Fireproofed with Concrete Tile



Masonic Temple on Wick Avenue

Thayer and Thayer, Architects, New Castle, Pa. Joseph Millham, Contractor



# Adaptability of Concrete Structural and Fireproofing Tile

This material is useful in every type of building as demonstrated by the accompanying illustrations. In fact, it offers an effectual solution for the economical construction of houses, both sanitary and safe from fire loss and danger, which has been the one great problem of the ages.

The uses to which concrete structural tile is adaptable are so numerous and developing so rapidly that it is impossible to give a list of them. The accompanying illustrations give some idea of the varied demands that have been made upon the tile manufactured at the initial plant operated by the Concrete Stone and Sand Company in Youngstown.

The scope for decorative and artistic treatment of exteriors is only limited by the taste and genius of the designer. The plain tile wall, with stroke mortar joints, without any further treatment than customary brackets and trimmings, has a very substantial appearance and is much admired. The same type of exterior tastefully tinted with the trimmings in colors selected so as to blend or to contrast are very effective and beautiful. There is an endless variety for exterior plaster treatment, both with regard to the surface effect and the coloring matter employed. The material itself possesses an exceptional quality for holding exterior plasters not

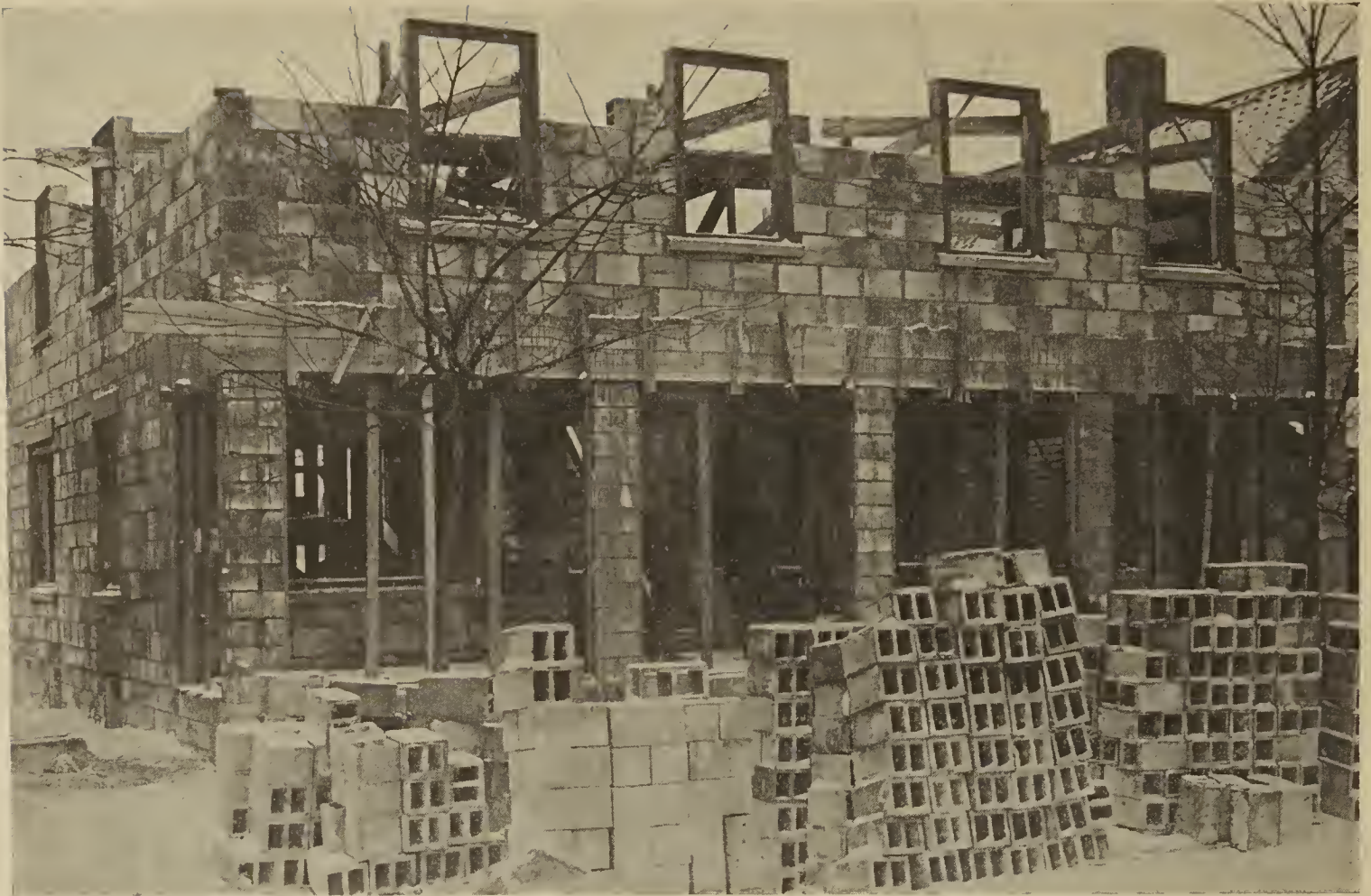
as yet fully comprehended by even the most expert builders and contractors. Results which have been achieved in exterior plaster on tile walls, in fact present a new field for the study of noble and graceful lines that building designers of the past have been loth to undertake. With concrete structural tile there has been a very pronounced success in this particular direction.

Quite recently our associated company operating in the New York market were called into consultation with the architects for the construction of the Alfred Vanderbilt hotel at the corner of Fourth Avenue and Thirty-fourth Street, for the purpose of determining the advisability of using concrete structural tile for the curtain walls of that steel frame and fire-proof building. The intention is to employ one size and shape of tile, to-wit: 4"x12"x12", and laying them in such a way as to produce a wall twelve inches thick, according to the building code. The mortar joints are being considered in one inch beds of particularly assembled aggre-



Telegram Building, Wood and Phelps Street  
Reinforced Concrete Curtain Walls of Tile and Brick Veneered  
Angus S. Wade, Architect. Niedermeier & Restle, Contractors





Sullivan Apartments, at Falls and Mill  
Miller & Ford, Architects

gates, the same aggregates being used in the manufacture of the tile with the same kind of Portland cement. After these curtain walls are laid the entire surface will be gone over with pneumatic bush hammers and pick hammers so as to surface out the distinctive character of the aggregate, thereby introducing an extremely economical and tremendously effective exterior surface, which has as yet never been used upon a large scale, although mass concrete surfaces have been treated in this way with the most excellent results, but at very considerable cost. Beyond the artistic value of this method the structural value obtained by the use of concrete structural tile is a matter of the first importance, for the reason that the beams and columns of the steel frames are thereby relieved of fully one-half of the dead wall load necessary to figure

where twelve-inch curtain walls of brick are used that would not in any way add to the strength, durability or usefulness of the building with the additional weight. Concrete fire-proofing tile has been specified for all of the partitions and furring in this hotel building, and were selected on account of the perfect dimensions and uniform shapes of the tile with the attendant economy in the plastering and finishings of the interior, which is not obtainable with other materials. Whether the exterior treatment just described is employed in this particular instance or not, the conference in which the matter has been considered develops a principle of artistic exterior treatment which will be very widely used in the building season of 1910, with as many variations and particular specifications as each case will suggest.



Block of Workingmen's Houses on Cypress and Gibson Streets





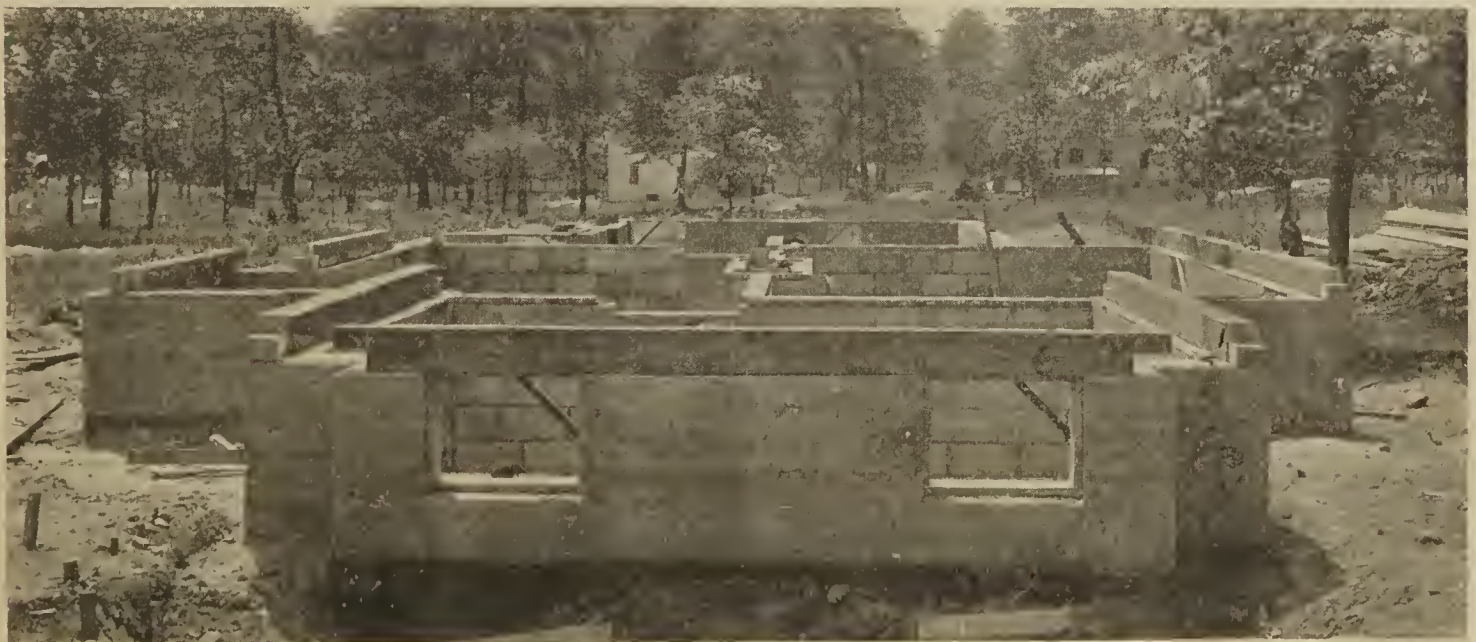
Hamilton Stores and Flats on Market Street

Upon the topic of the decoration of exteriors and the treatment of tile walls in particular cases, our associated companies, as well as the developments in our own operations, bring to light almost every day some new variety of treatment quite within the reach of ordinary economical building practice. Future developments in this particular line are indicated by the increasing interest constantly expressed by the most eminent architects, engineers and men of prominence in learned vocations, in all parts of the country, by communications showing a very comprehensive study of the subject along independent and new lines.

For partitions and curtain walls in buildings having reinforced concrete frame, or steel cage construction, concrete hollow tile is the lightest material of sufficient strength for these purposes. The true, plane face of the tile when used in partition

work, offers the best surface for holding plaster yet introduced. Mechanics spreading plaster on concrete tile partitions cover from a third to a half more surface in a day, with ease and satisfaction, and at the same time saving 20 to 25 per cent. of the mortar. In partitions it is light on account of the hollow space, materially relieving the dead load upon the structural members that carry the building.

In floor construction in connection with ribs of reinforced concrete, the concrete tile is superior to any other because the fresh concrete rapidly becomes a solid, inseparable mass with the tile. The even edges and angles are a distinct advantage in cheapening the cost of centering floor and roof spans from beneath, as the true surfaces of the tiles bear squarely upon the boards. Practice has developed surprising economies in this line of work by the use of concrete tiles rather than materials that have been in use for the same purpose heretofore.



Tile Partitions Used in Connection with Solid Concrete Outer Walls





Century Building on Federal Street  
Owsley & Boucherle, Architects. C. H. Connell, Contractor



Interior of the Macaroni Manufacturing Company's Building on Federal Street  
Kling & Fink, Architects. C. H. Connell, Contractor

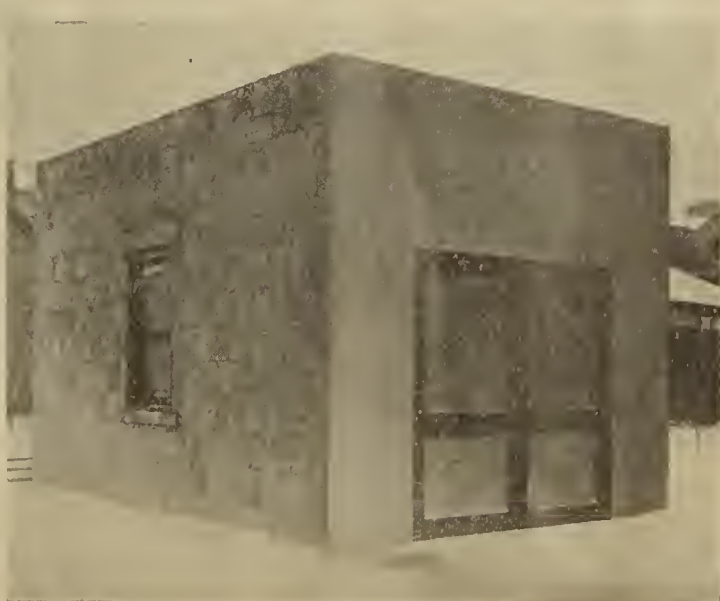




Wells-Salow Building on Federal Street  
Angus S. Wade, Architect



Garage on Broadway



Pauly Garage

The Concrete Stone and Sand Company  
Youngstown, Ohio



# Safe and Artistic Residences at Lowest Cost

The widest angle of usefulness, and at the same time the most important development of the concrete industry, is that which provides the safest and most permanent, and at the same time the most sightly and convenient homes for the people. The first step of civilization, the inseparable duty of the head of every family, is to provide a shelter, and the first consideration is the safety of the occupants by day and by night, awake and asleep. Not until Mr. Pauly's inventions were completed has it been possible to construct a concrete home at a price within the reach of a large majority of the human family, while with the use of the materials made by his system there is no longer excuse for any householder to face the danger of fire loss or the dread of the destruction of life.

The carefully compiled statistics bearing upon this subject throughout the entire United States are, indeed, astounding to contemplate. Fire losses in residence properties are annually set down in figures that reach into the hundreds of millions, and the acknowledged incompleteness of these returns indicates conservatively that no less than one billion of dollars is turned into smoke and ashes regularly with each succeeding year. The misguided opinions of the past are most forcefully expressed in the fact that no less than 90% of the homes of American families are built exclusively of wood, in spite of the progress of the last two score years, in which

a very increasing number of brick and concrete houses have been introduced.

Figures do not make an adequate picture to the mind of the reader, but when one contemplates that the loss of life by the burning of homes in the United States every year amounts to more than the total slaughter in all the battles of the recent Russo-Japanese war during two exceptionally bloody campaigns, some idea can be formed. Nearly all of these lives, by consulting the records, will be found to have been wiped out either while the people themselves were overtaken in sleep or in frantic endeavors to save the lives of others. It has not been confined to the rich or to the poor, to the influential or to the humble, to the old or to the young, but American citizens from every walk of life, from the lawmakers in the halls of Congress to helpless infants who were not responsible for their own acts.

Within the year of 1909 a number of populous cities were almost entirely wiped out by fire, as evidenced at Dallas, Texas; Rochester, N. Y.; Kalamazoo, Mich., and others needless to mention here. The force and effect of Mr. Pauly's invention for the manufacture of non-burning structural and fire-proofing material is to place within the reach of every investor in a home the distinct possibility of entirely eliminating such danger and risk, and with such economy that it really amounts to a matter of choice without additional cost.

At Youngstown, Ohio, where the initial plant of the inventor is located, this material is already



Residence on Belmont Avenue





Youngstown Transfer Company Stables on Phelps Street

recognized by the community at large, on account of the many satisfactory examples of homes which have been completed, that all builders without exception are giving it serious consideration. The demonstration has been so complete and far reaching that every builder considers first that his home must be of concrete tile to make it safe. Beyond this he appreciates the artistic, sanitary and economical features which have been equally as substantially established.

The home market for concrete structural tile has been won beyond any question, and the merits of the material will be just as readily recognized by

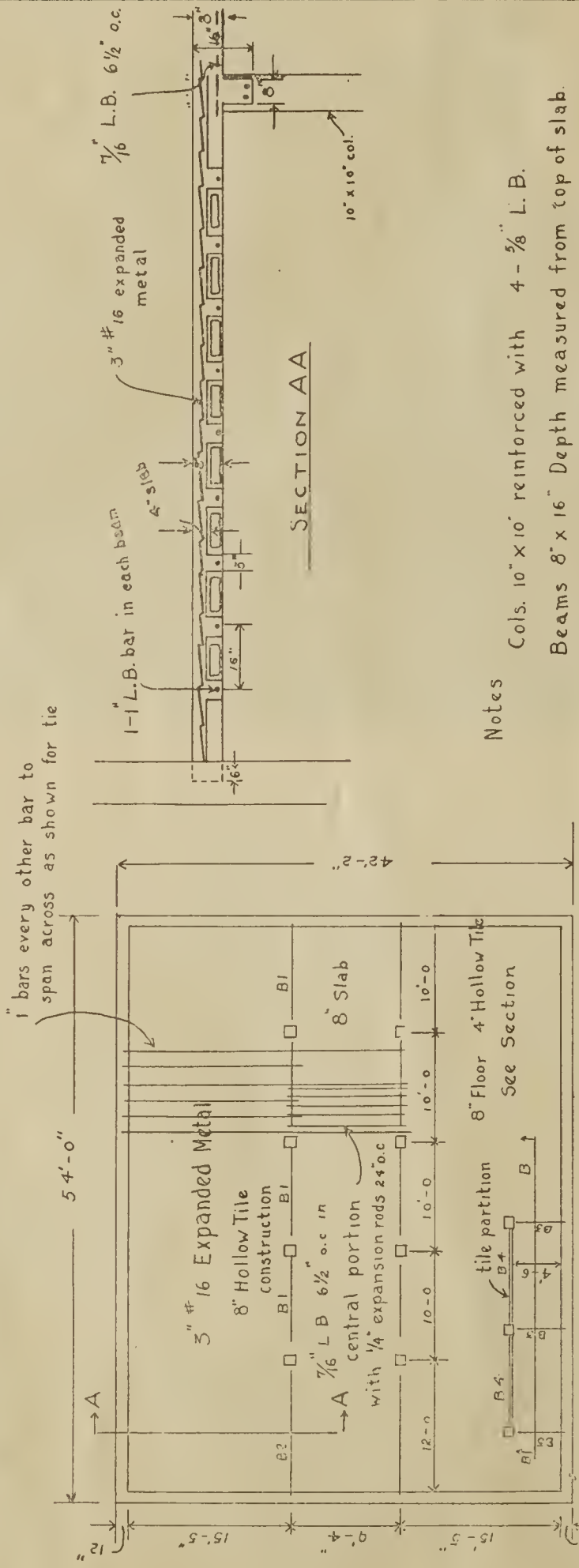
builders of every locality where these goods are obtainable.

The parent company at Youngstown, in conjunction with a number of associate companies located at the most important markets of the country, are providing the means for distributing this material as conveniently as it is possible for such an important business with such enormous quantities of detailed specifications. At the present time the materials are available in very extensive territories, and the invitation of this company to everyone who contemplates the building of a home is to communicate with the head office at Youngstown, Ohio.



Workingmen's Flats on Bond Court



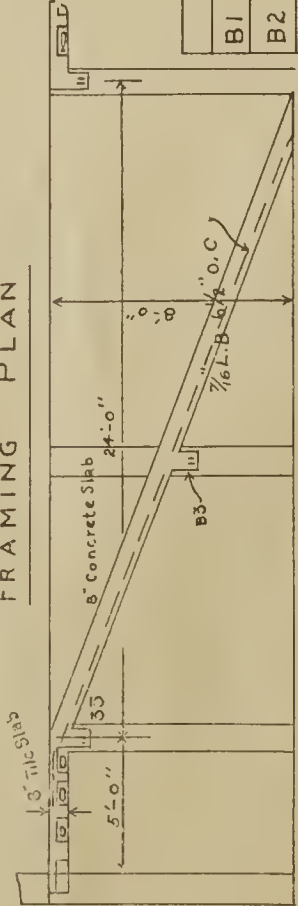


Notes

- Cols. 10" x 16" reinforced with 4 - 5/8" L.B.
- Beams 8" x 16" Depth measured from top of slab.
- Slabs reinforced with lug bars & expanded metal.
- All beams to be reinforced with girder frames.

Schedule	
B1	2-1/2" fr. = 2.64"
B2	2-1/8" fr. = 3.06"
B3	2-5/8" fr. = 1.56"
B4	do

FRAMING PLAN



Section B-B

THE GENERAL FIREPROOFING CO.  
YOUNGSTOWN, OHIO.

B'LD'G: ED. MANLEY  
LOCATION: YOUNGSTOWN, OH.  
ARCHT'S: \_\_\_\_\_

TITLE: FRAMING PLAN & SECTION  
SCALE: 1/8" = 1'-0" DATE: 11/27/08  
DR: R.R. TR: O.O. OK: J.L.A. APP: \_\_\_\_\_  
EST. No: 720 SHEET No: 79001





**Garage on Fifth Avenue**



**Apartment House on Oak Hill Avenue**

## About the Home and On the Farm

In isolated locations like the farmhouse, with the attendant barn and all the subsidiary buildings of such an establishment, which of necessity are far removed from the fire protection usual to cities and closely built up communities, this concrete structural and fire-proofing tile offers the solution of the one great hazard to the farmer. Several forms of this material are equally useful for draining low lands, and for this purpose it is, perhaps, far superior to anything that has been applied to such a use. The concrete barn is attractive for the reason that it is easy to clean and maintain a truly sanitary condition. Where a large number of horses and cattle are housed this is a factor that will be ap-

preciated. Hen-houses of concrete are more productive in both the amount of eggs that are yielded as well as the number of chickens that are hatched, owing to the elimination of vermin and the attendant diseases which fowls have been susceptible to. These items to the farming establishment that works with records that keep the cost, and figures the net return, amounts to a good profit-earning investment, as against those types of construction which have been universally employed in the past in these essential particulars. The farmer is just as much entitled to have his home and his children safely guarded from the fire loss and the fire danger as the city dwellers, and by the route of the Pauly system it is now within his reach.



**Addition to Leather Shop on Federal Street**





Flats at Corner of Bissel and Elm Streets (Under Construction)

I. J. Goldston, Architect

## Inherent and Basic Economy

The claims which are set up in this catalogue in regard to the economy obtained by using concrete structural and fire-proofing tile are not idly made. There is a distinct, practical and well-confirmed reason for every statement with regard to the qualities of this material. With the minimum amount of raw material the maximum surface measurement is obtained in the Pauly system, with due regard to the necessary structural calculations. It follows that waste material being eliminated, just so much of the cost is saved. By the same process the weight of the finished material is reduced to the minimum, which affects the cost of transportation, the cost of handling and re-handling, as well as the speed and facility of the use of the goods, which has a direct bearing upon the cost of the construction itself.



Garage on Broadway



Flats at Corner of Bissel and Elm Streets (Completed)



## To the Building Public

In issuing this catalogue we have selected the illustrations with a view to giving the reader and intending investors generally, a comprehensive glance at the very gratifying achievements that stand to the credit of concrete structural and fireproofing tile in the home market of the inventor at Youngstown. By no means are all of the residences and other buildings available depicted here, but those shown are fairly representative of all, in fact they cover the whole scope of building activity pretty fully. At the least our illustrations show that our goods are being successfully used in every useful type of building, and the demand growing out of the confidence of the public in both the material and the system of construction now has our plant well stocked with orders for tile. There is no doubt but that one hundred houses will be built of concrete structural tile in Youngstown in 1910, in fact the orders now on file amount to half that many on January 10.

What has been done in one city can easily be repeated in any locality, and the reader who wants to use this material and system of construction need not go unprovided. This company and our associated companys will furnish the trade with tile up to the limit of capacity of the various plants.

We realize that other materials have merit, and are entitled to due consideration by every builder, but the regular operation of our plant plainly shows that there is a well defined position of usefulness for concrete structural and fireproofing tile that cannot be so well taken care of in any other way. The intrinsic merit of the goods made under the Pauly system is responsible for the very gratifying measure of success which is now a matter of record.

We unreservedly recommend tile walls and partitions to be used instead of wooden walls, and fireproof tile in combination with reinforced concrete for floors and roofs where fire prevention is expected, with the assurance that this can be done with our system of construction and our building material at a cost equivalent to any other substantial method. In short, of the highest grades of building materials we claim that in certain cases our structural and fireproofing tile are far and away the best obtainable and known to the markets of this day.

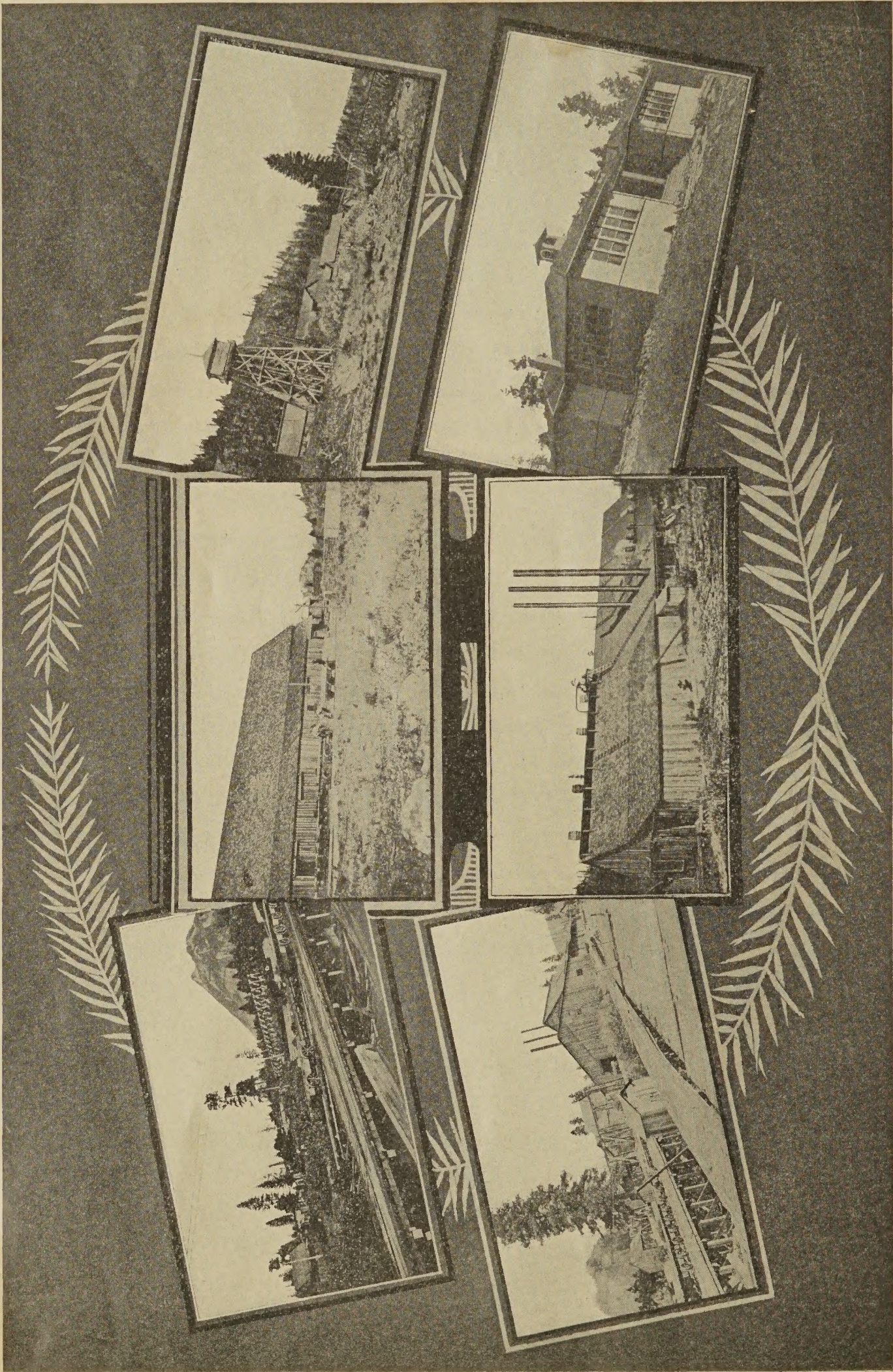
A careful investigation by all who have the intention of investing money in any kind of building is invited. The advantages and economies which concrete structural and fireproofing tile alone can offer, may be worth the trouble, and is very likely to save some money and even human lives by their use.

Sincerely,

A. A. PAULY

Youngstown, Ohio, January 10, 1910





Plant of the Mt. Shasta Volcanic Tile and Cement Company, New Igerna, Cal.  
These views show the plant from various points of view, and a school house neatly built of its product



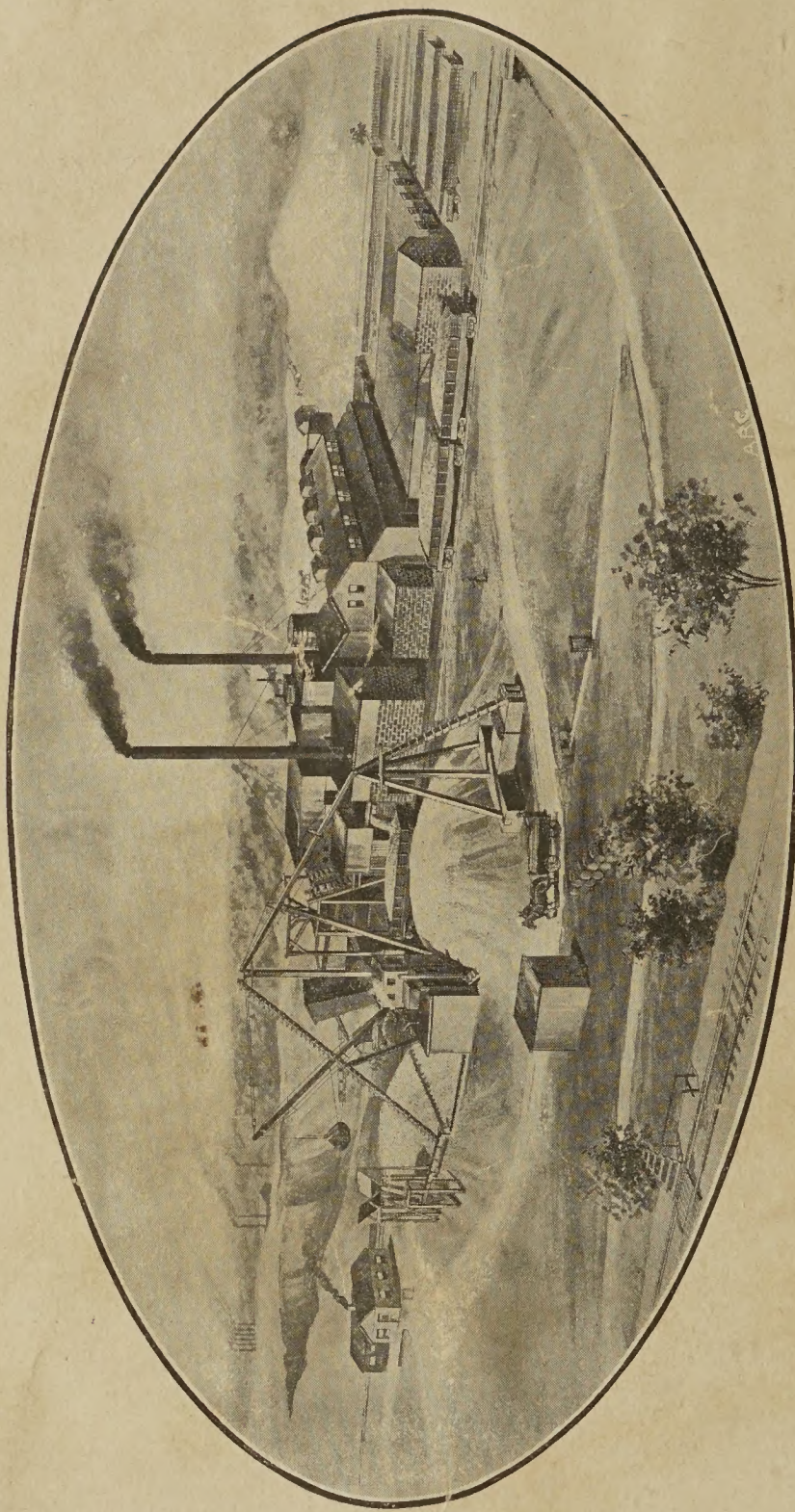
THE constant over-demand is rapidly exhausting one of our greatest natural resources. It is only logical to conclude that, in the course of a very short time, lumber must necessarily be classed with the most expensive of building materials. The general public is rapidly awakening to this fact and has watched with interest the progress of experimentation with and practical tests of the various new manufactured building materials. The proved qualities of economy, durability, and fire and moisture resistance have already won for this class of structural tile a high place in the esteem of the people. We trust that the information we have given herein concerning this product has proved interesting and instructive to all those who are endeavoring to become acquainted with the practical uses of concrete.

Persons who are contemplating the erection of buildings of any nature will doubtless be much benefitted by a careful perusal of this catalogue. The facts we bring out show conclusively that by the Pauly system the basic concrete mixture reaches its highest value as a building material, becoming a perfect fire resister, and of low water absorption, with a wide range of adaptability because of its low cost, strength and weatherproof qualities.

We receive many inquiries in regard to the manner in which we lease the Pauly machines. It may be well to state here that we do not consider it as a machine proposition, but place our system only with parties who are financially prepared to erect a factory in which this business can be properly conducted, and the high standard of the product maintained.







THE FACTORY OF THE CONCRETE STONE AND SAND COMPANY  
AT YOUNGSTOWN, OHIO